

# Texas Water Development Board



**W** *Conditions* **A** **T** **T** **E** **R**

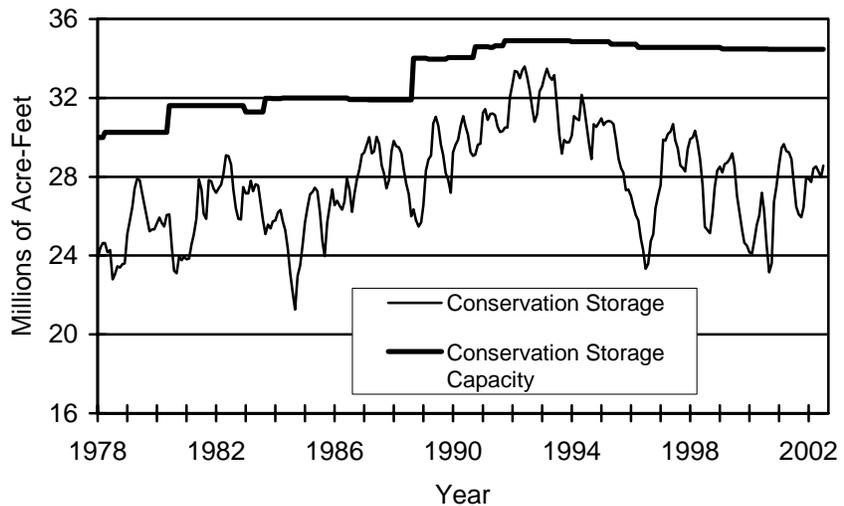
## RESERVOIR STORAGE

*July 2002*

Near the end of July, the 77 reservoirs monitored for this report held 28.56 million acre-feet in conservation storage, or 82.8 percent of the conservation storage capacity of the State's major reservoirs. Statewide total storage is just below normal for this time of year. Storage increased significantly for the month, up 0.58 million acre-feet (+1.7%). Compared to last year at this time, storage is up 0.82 million acre-feet (+2.4%).

Storage in the Upper Coast (100%), East (94%) and North Central (95%) Regions remained at or near capacity, while the High Plains (36%), Trans-Pecos (14%) and Edwards Plateau (46%) Regions remained low. The Low Rolling Plains (51%) and South Central (100%) Regions experienced significant increases this month. Contents in the Southern Region (46%) increased by 21% (both Lake Corpus Christi and Choke Canyon Reservoir are presently at or very near capacity). Storage is at 100% in 24 reservoirs, the same number as last month.

### CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS



Current data are based on elevation near end of month at 77 reservoirs that represent 98 percent of total conservation storage capacity in Texas reservoirs having a capacity of 5,000 acre-feet or more.

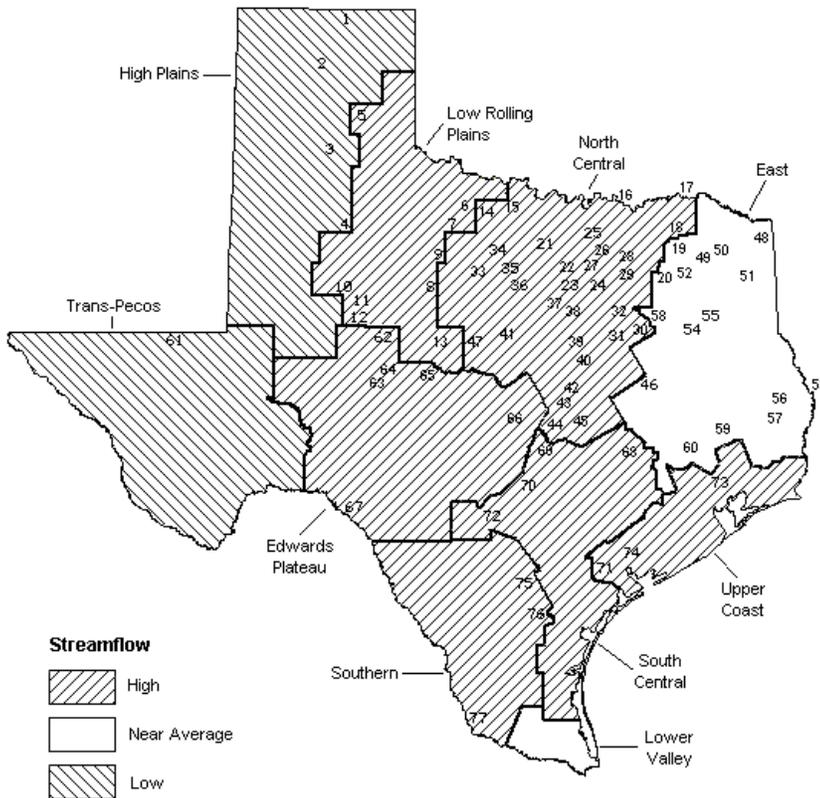
# STREAMFLOW

Of 29 reporting index stations in July, computed 30-day mean flows were very high (0% - 5% exceedance) at 6 stations, high (5% - 30% exceedance) at 12 stations, near normal (30% - 70% exceedance) at 9 stations, and very low (95% - 100% exceedance) at 2 stations. In comparison to June, flows increased at 26 index stations and decreased at 3.

On a regional basis, flows in July were very high in the Southern Region, high in the Low Rolling Plains, North Central, Edwards Plateau, South Central and Upper Coast Regions, low in the High Plains Region, very low in the Trans-Pecos Region and normal in the East Region.

## JULY STREAMFLOW CONDITIONS

Reservoirs Shown on Map



- |                                  |                             |
|----------------------------------|-----------------------------|
| 1. Palo Duro Reservoir           | 40. Waco Lake               |
| 2. Lake Meredith                 | 41. Proctor Lake            |
| 3. MacKenzie Reservoir           | 42. Belton Lake             |
| 4. White River Lake              | 43. Stillhouse Hollow Lake  |
| 5. Greenbelt Reservoir           | 44. Lake Georgetown         |
| 6. Lake Kemp                     | 45. Granger Lake            |
| 7. Miller's Creek Reservoir      | 46. Lake Limestone          |
| 8. Fort Phantom Hill Reservoir   | 47. Lake Brownwood          |
| 9. Lake Stamford                 | 48. Wright Patman Lake      |
| 10. Lake J. B. Thomas            | 49. Lake Cypress Springs    |
| 11. Lake Colorado City           | 50. Lake Bob Sandlin        |
| 12. Champion Creek Reservoir     | 51. Lake O' the Pines       |
| 13. Hords Creek Lake             | 52. Lake Fork Reservoir     |
| 14. Lake Kickapoo                | 53. Toledo Bend Reservoir   |
| 15. Lake Arrowhead               | 54. Lake Palestine          |
| 16. Lake Texoma                  | 55. Lake Tyler              |
| 17. Pat Mayse Lake               | 56. Sam Rayburn Reservoir   |
| 18. Cooper Lake                  | 57. B. A. Steinhagen Lake   |
| 19. Lake Sulphur Springs         | 58. Cedar Creek Reservoir   |
| 20. Lake Tawakoni                | 59. Lake Livingston         |
| 21. Bridgeport Reservoir         | 60. Lake Conroe             |
| 22. Eagle Mountain Reservoir     | 61. Red Bluff Reservoir     |
| 23. Benbrook Lake                | 62. E. V. Spence Reservoir  |
| 24. Joe Pool Lake                | 63. Twin Buttes Reservoir   |
| 25. Ray Roberts Lake             | 64. O. C. Fisher Lake       |
| 26. Lewisville Lake              | 65. O. H. Ivie Reservoir    |
| 27. Grapevine Lake               | 66. Lake Buchanan           |
| 28. Lavon Lake                   | 67. Intl. Amistad Reservoir |
| 29. Lake Ray Hubbard             | 68. Somerville Lake         |
| 30. Richland-Chambers Creek Lake | 69. Lake Travis             |
| 31. Navarro Mills Lake           | 70. Canyon Lake             |
| 32. Bardwell Lake                | 71. Coletto Creek Reservoir |
| 33. Hubbard Creek Reservoir      | 72. Medina Lake             |
| 34. Lake Graham                  | 73. Lake Houston            |
| 35. Possum Kingdom Lake          | 74. Lake Texana             |
| 36. Lake Palo Pinto              | 75. Choce Canyon Reservoir  |
| 37. Lake Granbury                | 76. Lake Corpus Christi     |
| 38. Lake Pat Cleburne            | 77. Intl. Falcon Reservoir  |
| 39. Whitney Lake                 |                             |

**CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS**

| Name of Lake<br>or Reservoir          | No.<br>on<br>Map | Conservation<br>Storage<br>Capacity<br>(acre-feet) | Conservation<br>Storage<br>Late July 2002<br>(acre-feet) (%) | Change since<br>Late June<br>2002<br>(acre-feet) (%) | Change since<br>Late July<br>2001<br>(acre-feet) (%) |
|---------------------------------------|------------------|--|--|--|--|
| <b>HIGH PLAINS</b>                    |                  |  |  |  |  |
| Palo Duro Reservoir                   | 1                | 60,900   | 4,780 8  | -290 0   | -3,220 -5  |
| Lake Meredith (Texas)                 | 2                | 500,000  | 213,800 43   | -4,800 -1  | -100,400 -20   |
| Lake Meredith<br>(Texas and Oklahoma) | (2)              | 779,560  | 213,800 27   | -4,800 -1  | -100,400 -13   |
| MacKenzie Reservoir                   | 3                | 46,250   | 7,340 16   | -150 0   | -1,800 -4  |
| White River Lake                      | 4                | 31,850   | 6,680 21   | -50 0  | -2,520 -8  |
| <b>TOTAL</b>                          |                  | <b>639,000</b>                                     | <b>232,600 36</b>  | <b>-5,290 -1</b>                                     | <b>-107,940 -17</b>                                  |
| <b>LOW ROLLING PLAINS</b>             |                  |  |  |  |  |
| Greenbelt Reservoir                   | 5                | 58,200   | 22,970 39  | -430 -1  | -1,530 -3  |
| Lake Kemp                             | 6                | 319,600  | 227,000 71   | 51,000 16  | 69,600 22  |
| Miller's Creek Reservoir              | 7                | 27,890   | 17,650 63  | -320 -1  | 2,910 10   |
| Fort Phantom Hill Reservoir           | 8                | 70,030   | 51,930 74  | 23,690 34  | 17,840 25  |
| Lake Stamford                         | 9                | 52,700   | 46,090 87  | 10,050 19  | 31,900 61  |
| Lake J. B. Thomas                     | 10               | 202,300  | 21,830 11  | 2,430 1  | 4,220 2  |
| Lake Colorado City                    | 11               | 30,800   | 17,640 57  | -280 -1  | -300 -1  |
| Champion Creek Reservoir              | 12               | 41,600   | 2,700 6  | -190 0   | 350 1  |
| Hords Creek Lake                      | 13               | 8,600  | 2,780 32   | 190 2  | -1,020 -12   |
| <b>TOTAL</b>                          |                  | <b>811,720</b>                                     | <b>410,590 51</b>  | <b>86,140 11</b>                                     | <b>123,970 15</b>                                    |
| <b>NORTH CENTRAL</b>                  |                  |  |  |  |  |
| Lake Kickapoo                         | 14               | 106,000  | 94,250 89  | 1,500 1  | 5,170 5  |
| Lake Arrowhead                        | 15               | 262,100  | 166,100 63   | -800 0   | -13,400 -5   |
| Lake Texoma                           | 16               | 2,722,300  | 2,660,000 98   | -62,300 -2   | 266,000 10   |
| Pat Mayse Lake                        | 17               | 124,500  | 115,300 93   | -3,000 -2  | -1,200 -1  |
| Cooper Lake                           | 18               | 273,000  | 273,000 100  | 0 0  | 0 0  |
| Lake Sulphur Springs                  | 19               | 17,710   | 17,550 99  | -160 -1  | 5,990 34   |
| Lake Tawakoni                         | 20               | 936,200  | 867,200 93   | -13,000 -1   | 46,600 5   |
| Bridgeport Reservoir                  | 21               | 374,830  | 307,900 82   | -2,600 -1  | -40,400 -11  |
| Eagle Mountain Reservoir              | 22               | 178,380  | 165,600 93   | -10,000 -6   | 5,700 3  |
| Benbrook Lake                         | 23               | 88,200   | 78,350 89  | -3,470 -4  | 5,110 6  |
| Joe Pool Lake                         | 24               | 175,800  | 175,800 100  | 0 0  | 0 0  |
| Ray Roberts Lake                      | 25               | 798,760  | 796,900 100  | -1,860 0   | 4,400 1  |
| Lewisville Lake                       | 26               | 555,000  | 555,000 100  | 0 0  | 0 0  |
| Grapevine Lake                        | 27               | 187,700  | 180,100 96   | -3,600 -2  | 14,200 8   |
| Lavon Lake                            | 28               | 443,800  | 423,300 95   | -20,500 -5   | 38,000 9   |
| Lake Ray Hubbard                      | 29               | 413,420  | 386,700 94   | -8,500 -2  | 900 0  |
| Richland-Chambers Creek Lake          | 30               | 1,103,820  | 1,103,820 100  | 0 0  | 8,820 1  |
| Navarro Mills Lake                    | 31               | 55,810   | 55,810 100   | 0 0  | 3,300 6  |
| Bardwell Lake                         | 32               | 53,580   | 46,160 86  | -1,260 -2  | 1,700 3  |
| Hubbard Creek Reservoir               | 33               | 317,800  | 161,300 51   | 36,900 12  | 22,600 7   |
| Lake Graham                           | 34               | 45,000   | 33,860 75  | -850 -2  | -5,250 -12   |
| Possum Kingdom Lake                   | 35               | 551,820  | 530,500 96   | 11,000 2   | 34,800 6   |
| Lake Palo Pinto                       | 36               | 27,650   | 21,270 77  | -1,210 -4  | 300 1  |
| Lake Granbury                         | 37               | 135,680  | 133,100 98   | 2,200 2  | 11,300 8   |
| Lake Pat Cleburne                     | 38               | 25,300   | 24,490 97  | -810 -3  | 1,880 7  |
| Whitney Lake                          | 39               | 622,800  | 611,300 98   | -11,500 -2   | 59,400 10  |
| Waco Lake                             | 40               | 144,500  | 144,500 100  | 3,500 2  | 6,800 5  |
| Proctor Lake                          | 41               | 55,590   | 55,590 100   | 8,310 15   | 6,740 12   |
| Belton Lake                           | 42               | 434,500  | 434,500 100  | 1,000 0  | 7,300 2  |
| Stillhouse Hollow Lake                | 43               | 226,060  | 226,060 100  | 0 0  | 360 0  |
| Lake Georgetown                       | 44               | 37,010   | 37,010 100   | 630 2  | 1,480 4  |
| Granger Lake                          | 45               | 54,280   | 54,280 100   | 0 0  | 0 0  |
| Lake Limestone                        | 46               | 215,750  | 214,000 99   | -1,750 -1  | 1,300 1  |
| Lake Brownwood                        | 47               | 143,400  | 132,500 92   | 22,900 16  | 16,800 12  |
| <b>TOTAL</b>                          |                  | <b>11,908,050</b>                                  | <b>11,283,100 95</b>   | <b>-59,230 0</b>                                     | <b>516,700 4</b>                                     |

**CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS**

| Name of Lake<br>or Reservoir            | No.<br>on<br>Map | Conservation<br>Storage<br>Capacity<br>(acre-feet) | Conservation<br>Storage<br>Late July 2002<br>(acre-feet) (%) | Change since<br>Late June<br>2002<br>(acre-feet) (%) | Change since<br>Late July<br>2001<br>(acre-feet) (%) |
|---|------------------|--|--|--|--|
| <b>EAST</b>                             |                  |  |  |  |  |
| Wright Patman Lake                      | 48               | 142,700  | 142,700 100  | 0 0  | 0 0  |
| Lake Cypress Springs                    | 49               | 66,800   | 66,800 100   | 0 0  | 0 0  |
| Lake Bob Sandlin                        | 50               | 202,300  | 202,300 100  | 0 0  | 4,200 2  |
| Lake O' the Pines                       | 51               | 252,000  | 252,000 100  | 0 0  | 0 0  |
| Lake Fork Reservoir                     | 52               | 635,200  | 635,200 100  | 0 0  | 0 0  |
| Toledo Bend Reservoir                   | 53               | 4,472,900  | 4,158,000 93   | -198,000 -4  | 4,000 0  |
| Lake Palestine                          | 54               | 411,300  | 402,000 98   | -3,500 -1  | -1,500 0   |
| Lake Tyler                              | 55               | 73,700   | 73,700 100   | 0 0  | 0 0  |
| Sam Rayburn Reservoir                   | 56               | 2,876,300  | 2,584,000 90   | -106,000 -4  | -292,300 -10   |
| B. A. Steinhagen Lake                   | 57               | 94,200   | 44,640 47  | -19,550 -21  | -38,320 -41  |
| Cedar Creek Reservoir                   | 58               | 637,050  | 626,900 98   | 900 0  | 20,100 3   |
| Lake Livingston                         | 59               | 1,750,000  | 1,740,000 99   | -10,000 -1   | 1,000 0  |
| Lake Conroe                             | 60               | 429,900  | 421,500 98   | 18,900 4   | 12,500 3   |
| <b>TOTAL</b>                            |                  | <b>12,044,350</b>                                  | <b>11,349,740 94</b>   | <b>-317,250 -3</b>                                   | <b>-290,320 -2</b>                                   |
| <b>TRANS-PECOS</b>                      |                  |  |  |  |  |
| Red Bluff Reservoir                     | 61               | 307,000  | 42,390 14  | 2,110 1  | 5,980 2  |
| <b>TOTAL</b>                            |                  | <b>307,000</b>                                     | <b>42,390 14</b>   | <b>2,110 1</b>                                       | <b>5,980 2</b>                                       |
| <b>EDWARDS PLATEAU</b>                  |                  |  |  |  |  |
| E. V. Spence Reservoir                  | 62               | 488,760  | 53,700 11  | -620 0   | -13,920 -3   |
| Twin Buttes Reservoir                   | 63               | 177,800  | 6,020 3  | -190 0   | 20 0   |
| O.C. Fisher Lake                        | 64               | 119,200  | 4,830 4  | 1,850 2  | -860 -1  |
| O. H. Ivie Reservoir                    | 65               | 554,340  | 237,000 43   | 10,900 2   | -45,700 -8   |
| Lake Buchanan                           | 66               | 896,980  | 859,100 96   | 80,100 9   | 51,600 6   |
| Amistad Reservoir (Texas)               | 67               | 1,771,030  | 670,000 38   | 44,000 2   | -211,000 -12   |
| Amistad Reservoir<br>(Texas and Mexico) | (67)             | 3,151,300  | 829,000 26   | 17,000 1   | -247,000 -8  |
| <b>TOTAL</b>                            |                  | <b>4,008,110</b>                                   | <b>1,830,650 46</b>  | <b>136,040 3</b>                                     | <b>-219,860 -5</b>                                   |
| <b>SOUTH CENTRAL</b>                    |                  |  |  |  |  |
| Somerville Lake                         | 68               | 155,060  | 155,060 100  | 2,360 2  | 2,060 1  |
| Lake Travis                             | 69               | 1,144,100  | 1,144,100 100  | 178,800 16   | 112,100 10   |
| Canyon Lake                             | 70               | 385,600  | 385,600 100  | 0 0  | 6,100 2  |
| Coleta Creek Reservoir                  | 71               | 35,060   | 31,740 91  | 3,020 9  | 5,120 15   |
| Medina Lake                             | 72               | 254,000  | 254,000 100  | 16,500 6   | 21,100 8   |
| <b>TOTAL</b>                            |                  | <b>1,973,820</b>                                   | <b>1,970,500 100</b>   | <b>200,680 10</b>                                    | <b>146,480 7</b>                                     |
| <b>UPPER COAST</b>                      |                  |  |  |  |  |
| Lake Houston                            | 73               | 128,860  | 128,860 100  | 0 0  | 0 0  |
| Lake Texana                             | 74               | 157,900  | 156,700 99   | 17,900 11  | 20,600 13  |
| <b>TOTAL</b>                            |                  | <b>286,760</b>                                     | <b>285,560 100</b>   | <b>17,900 6</b>                                      | <b>20,600 7</b>                                      |

**CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS**

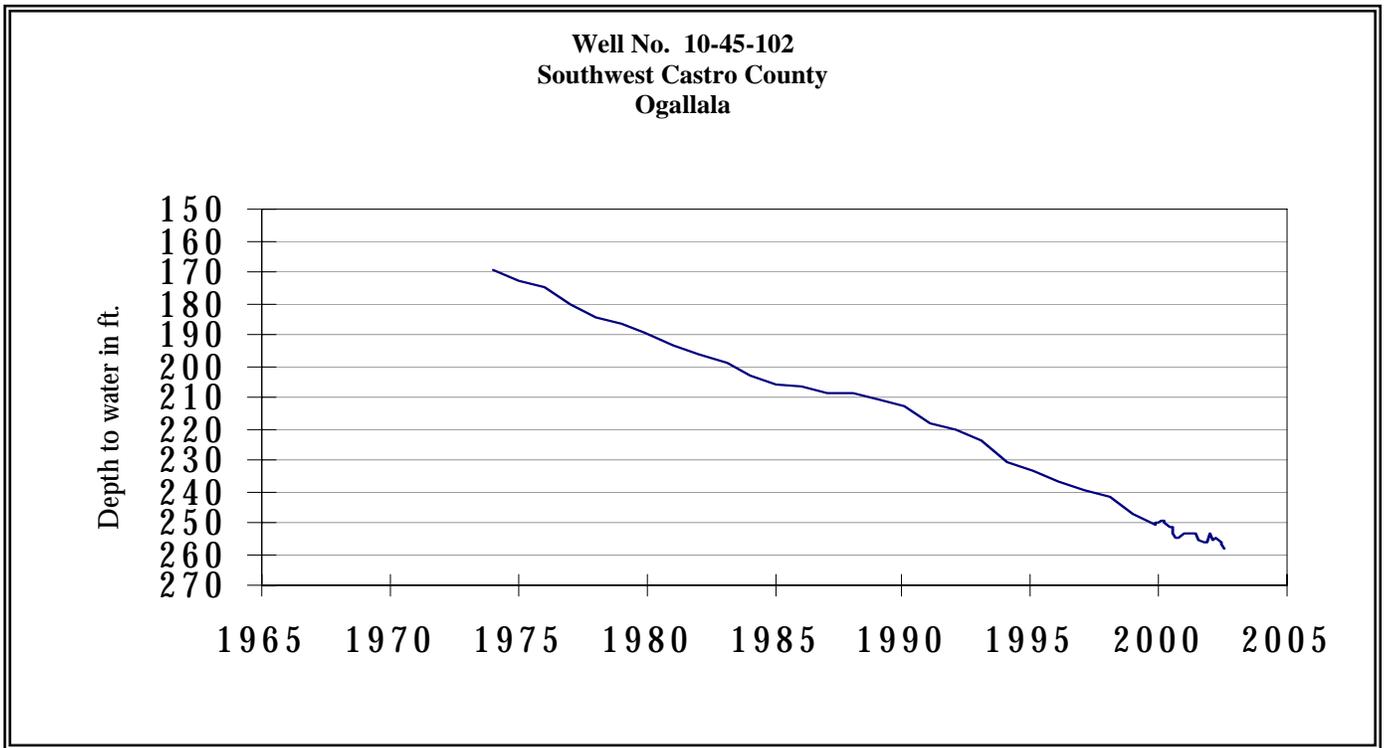
| Name of Lake<br>or Reservoir           | No.<br>on<br>Map | Conservation<br>Storage<br>Capacity<br>(acre-feet) | Conservation<br>Storage<br>Late July 2002<br>(acre-feet) (%) | Change since<br>Late June<br>2002<br>(acre-feet) (%) | Change since<br>Late July<br>2001<br>(acre-feet) (%) |
|--|------------------|--|--|--|--|
| <b>SOUTHERN</b>                        |                  |  |  |  |  |
| Choke Canyon Reservoir                 | 75               | 695,260  | 689,000 99   | 418,000 60   | 449,000 65   |
| Lake Corpus Christi                    | 76               | 241,240  | 240,700 100  | 32,200 13  | 175,110 73   |
| Falcon Reservoir (Texas)               | 77               | 1,555,120  | 222,000 14   | 67,000 4   | 5,000 0  |
| Falcon Reservoir<br>(Texas and Mexico) | (77)             | 2,653,290  | 318,000 12   | 92,000 3   | 77,000 3   |
| <b>TOTAL</b>                           |                  | <b>2,491,620</b>                                   | <b>1,151,700 46</b>  | <b>517,200 21</b>                                    | <b>629,110 25</b>                                    |
| <br><b>STATE TOTAL</b>                 |                  | <br><b>34,470,430</b>                              | <br><b>28,556,830 83</b>                                     | <br><b>578,300 2</b>                                 | <br><b>824,720 2</b>                                 |

**Note:**

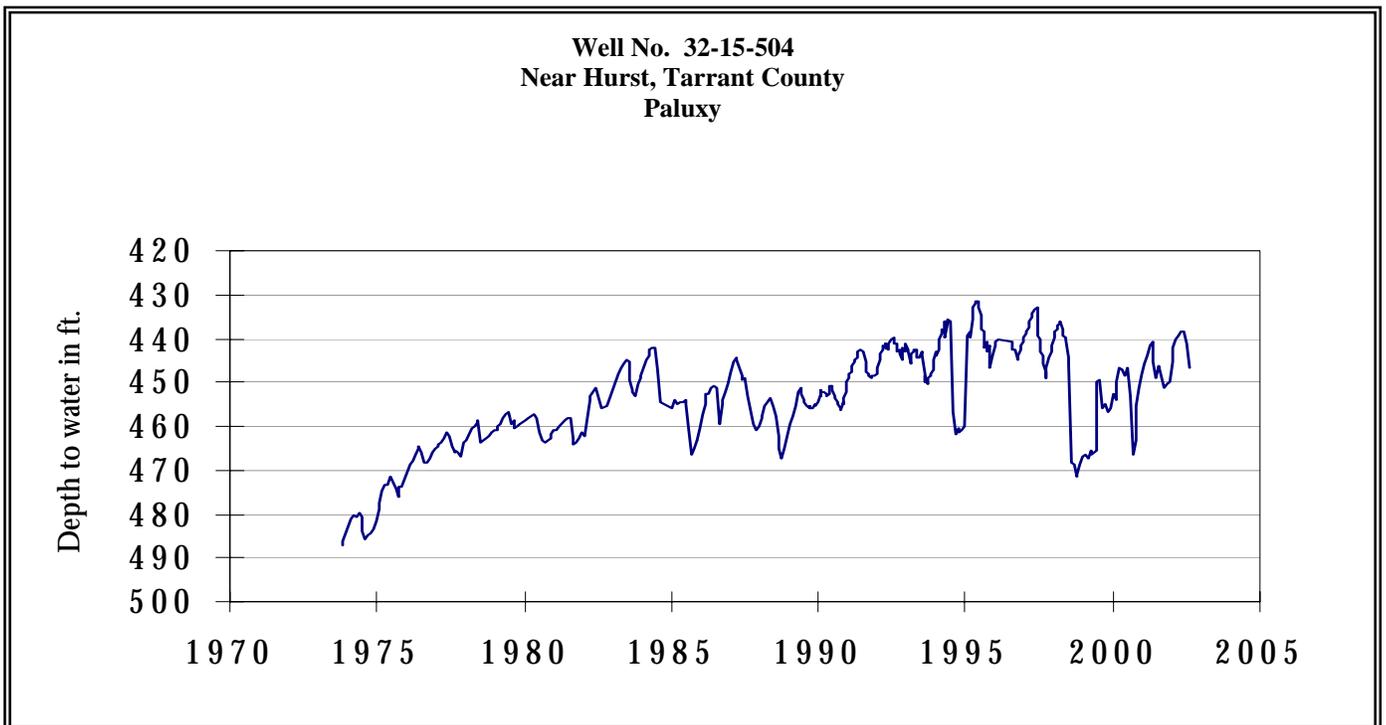
Conservation storage capacity is the space available to store water above the level of invert of lowest outlet works and below the level of top of conservation pool or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included is any water in flood control storage (above the top of conservation pool or normal maximum operating level), or any water in so called dead storage (in the bottom of the reservoir, below the invert of lowest outlet works and consequently not removable by gravity flow alone.) Percentage of conservation storage is based on the conservation storage capacity of the reservoir and the conservation storage in the reservoir for date shown. Percent change is given by % Change = 100 \* (current conservation storage - past conservation storage)/conservation storage capacity.

Current data are based on elevations near end of month at 77 reservoirs that together represent 98 percent of the total conservation storage capacity of major Texas reservoirs (those with capacity of 5,000 acre-feet or more each). Figures in parentheses for Lake Meredith represent the total conservation storage excluding 58,014 acre-feet of dead storage and are not included in State total. Preliminary figures are shown for the United States' share of conservation storage in International Amistad and International Falcon Reservoirs; the estimates may be subject to revision on completion of international water accounting. Texas (United States' share) and Mexico and are not included in State total.

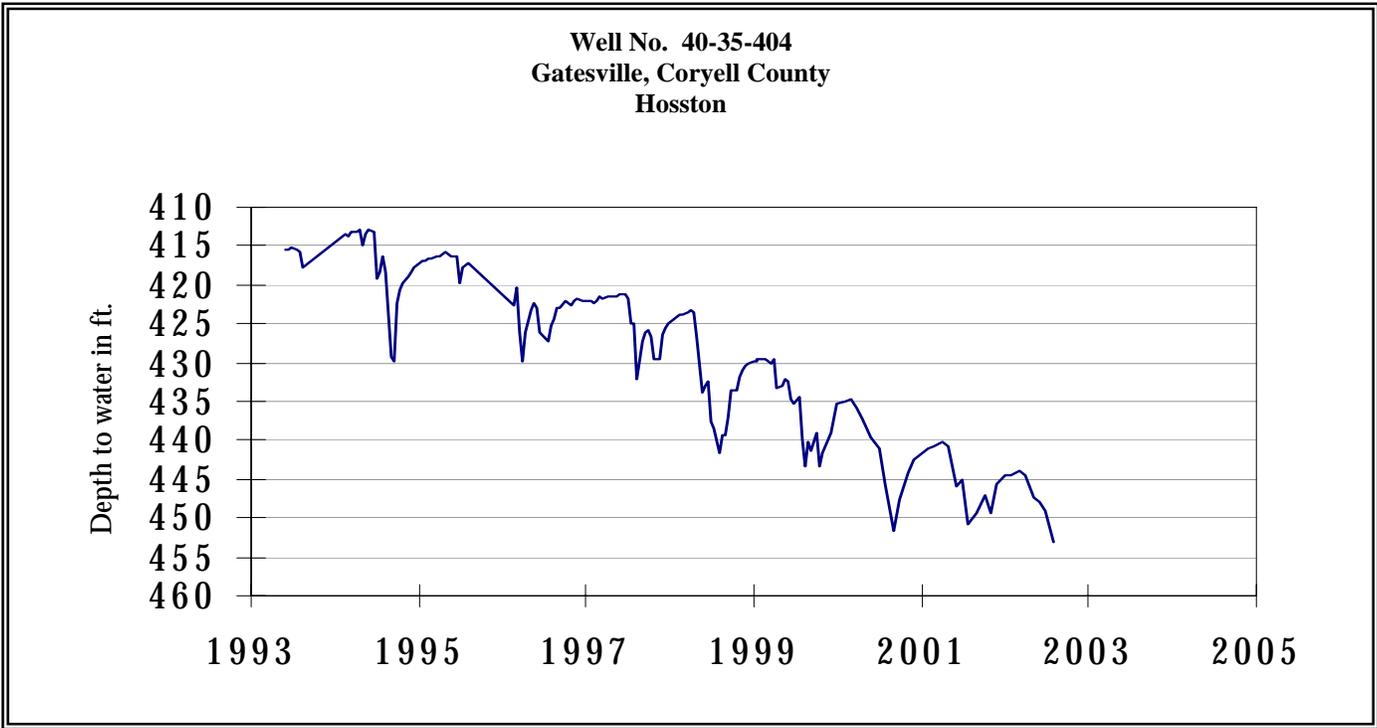
## JULY GROUND WATER LEVELS IN OBSERVATION WELLS



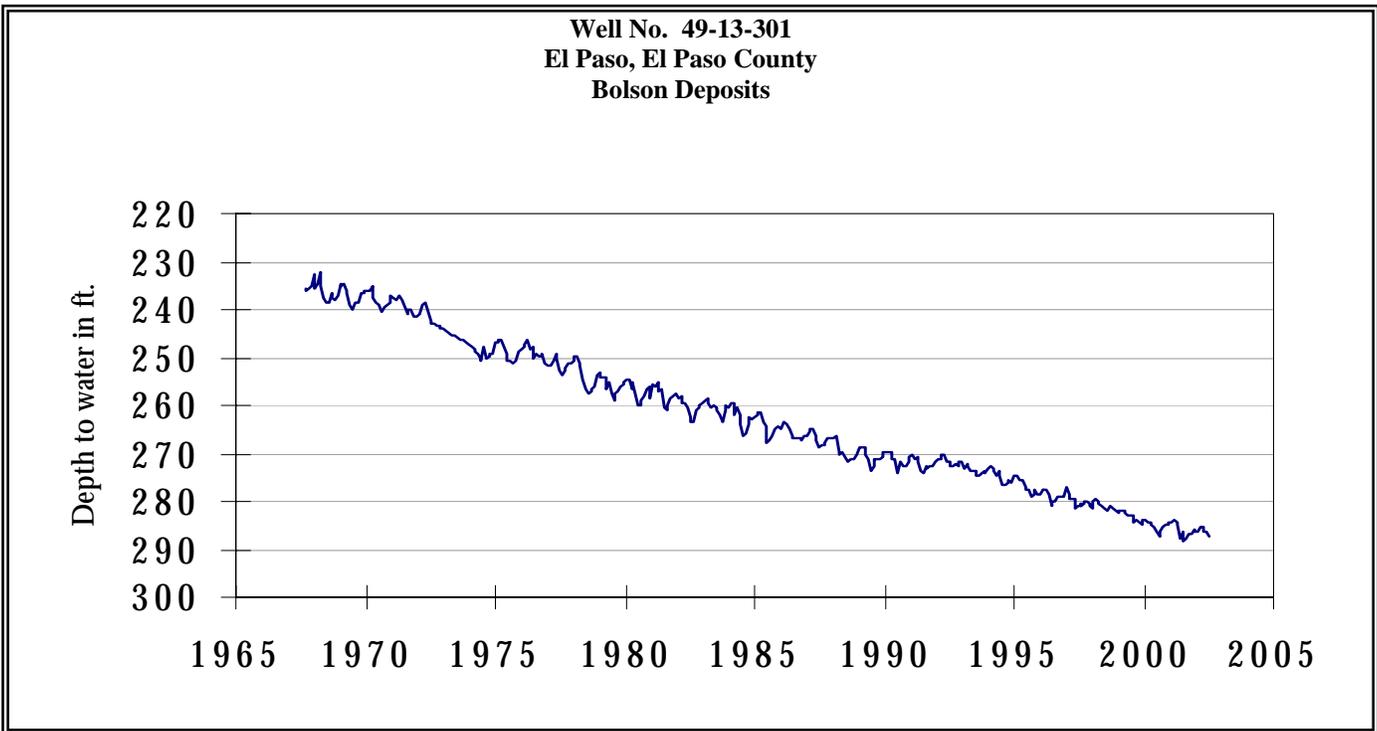
The late July water-level measurement in this Ogallala aquifer well, elevation 3,816 feet above sea level, was 258.08 feet below land surface. This measurement was 1.10 feet below last month's measurement, 2.22 feet below last year's measurement, and 102.08 feet below the initial measurement recorded in 1968.



The late July water-level measurement in this Paluxy Formation Trinity aquifer well, elevation 535 feet above sea level, was 446.75 feet below land surface. This measurement was 5.42 feet below last month's measurement, 0.55 feet below last year's measurement, and 53.36 feet below the initial measurement recorded in 1953.

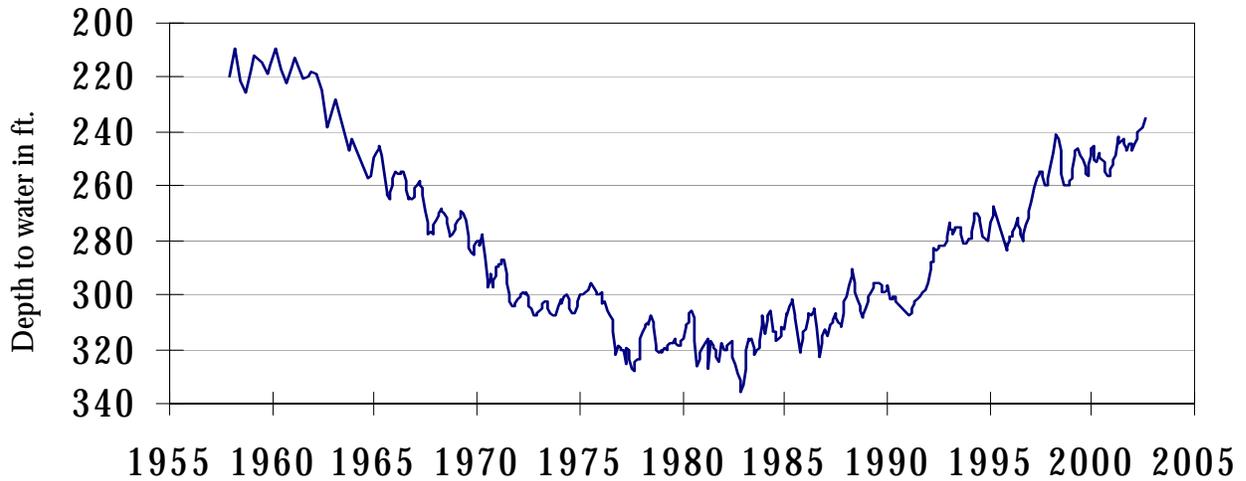


The late July water-level measurement in this Hosston Formation Trinity aquifer well, elevation 823 feet above sea level, was 453.16 feet below land surface. This measurement was 4.07 feet below last month's measurement, 2.23 feet below last year's measurement, and 161.16 feet below the initial measurement recorded in 1955.



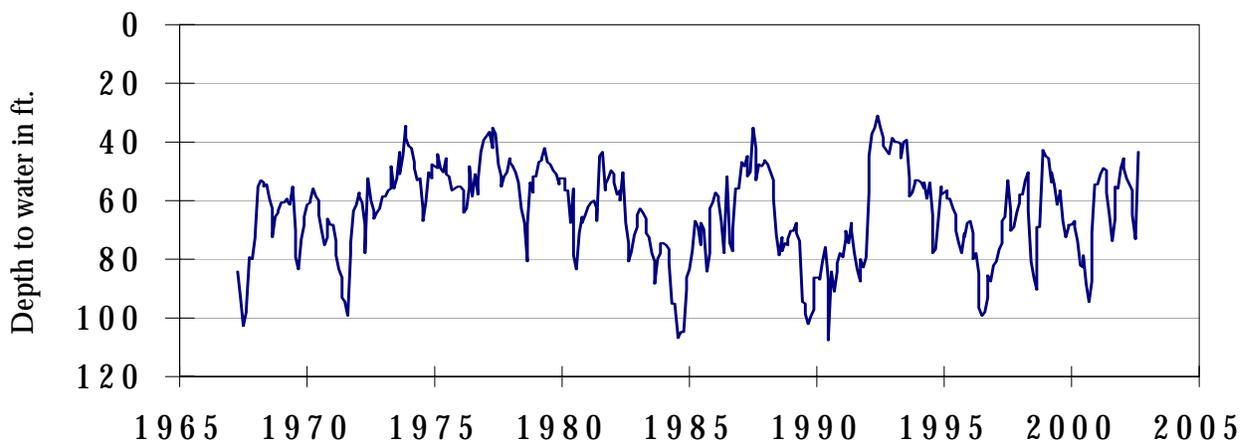
The late July water-level measurement in this Hueco Bolson aquifer well, elevation 3,882 feet above sea level, was 287.35 feet below land surface. This was 0.06 feet below last month's measurement, 1.03 feet above last year's measurement, and 55.45 feet below the initial measurement recorded in 1964.

**Well No. 65-14-409  
Alief, Harris County  
Evangeline**



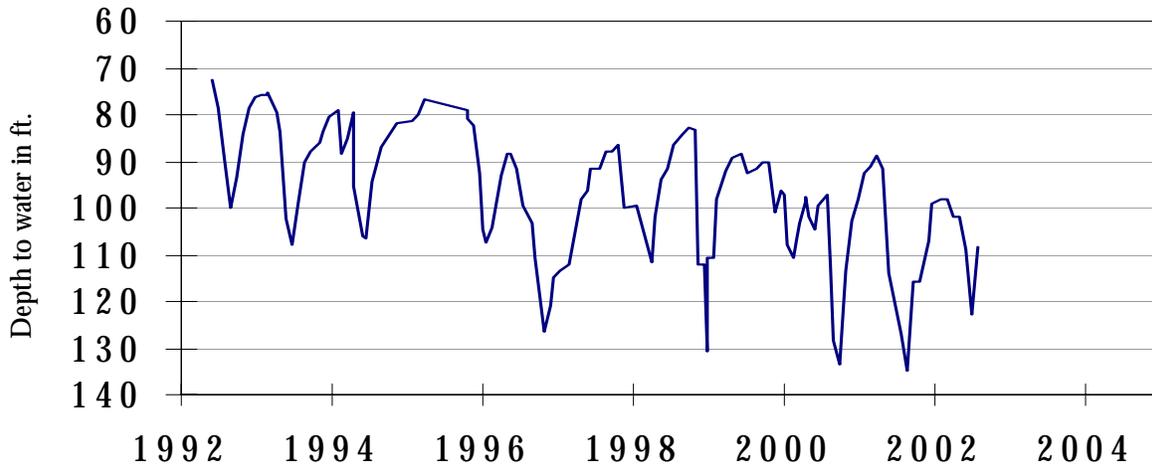
The late July water-level measurement in this Evangeline Formation Gulf Coast aquifer well, elevation 66 feet above sea level, was 234.70 feet below land surface. This was 3.61 feet above last month's measurement, 9.49 feet above last year's measurement, and 131.47 feet below the initial measurement recorded in 1947.

**Well No. 68-37-203 (J-17)  
In San Antonio, Bexar County  
Edwards and Associated Limestones**



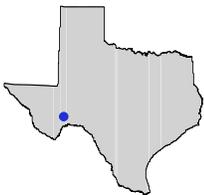
The late July water-level measurement in this Edwards (BFZ) aquifer well, elevation 731 feet above sea level, was 43.32 feet below land surface. This was 30.06 feet above last month's measurement, 30.39 feet above last year's measurement, and 16.30 feet above the initial measurement recorded in 1962.

**Well No. 68-60-912  
Between Poteet and Pleasanton, Atascosa County  
Carrizo**



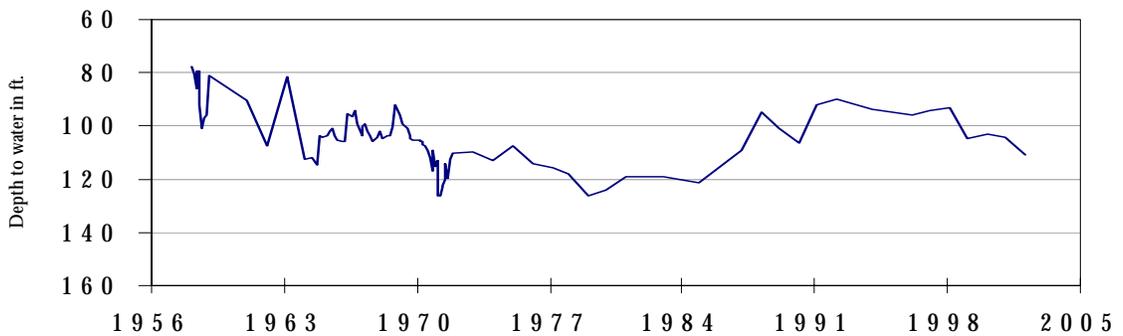
The late July water-level measurement in this Carrizo aquifer well, elevation 446 feet above sea level, was 108.30 feet below land surface. This measurement was 14.50 feet above last month's measurement, 19.30 feet above last year's measurement, and 27.05 feet below the initial measurement recorded in 1965.

***HYDROGRAPH OF THE MONTH***



Each month this space features a new hydrograph (marked with the ● symbol on the map) depicting different aquifers and different conditions in Texas.

**Well No. 5309301  
Pecos County**



This 210 ft. deep observation well, located approximately 2.5 miles south of Ft. Stockton, at an elevation of 3,012 feet above sea level, was completed in the Edwards-Trinity (Plateau) aquifer. The graph illustrates periods of drought for west Texas during the 1970s and 1980s.

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1700 N. CONGRESS AVE.  
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AUSTIN TX 78711-3231*